Science

Preparatory 2

1- Which of the following speeds is closest to the typical speed of sound waves in air?

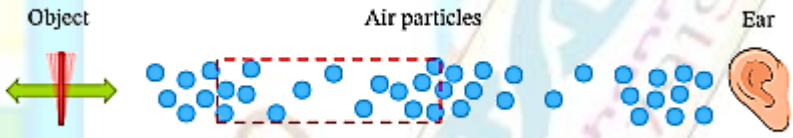
a. 3 000 m/s

b. 100 m/s

c. 1 300 m/s

d. 300 m/s

2- The diagram shows an object, a person's ear that is a short distance away from the object, and air particles between the object and the ear. What is the name for what is outlined by the dashed red box?



a. A wavelength of a sound wave

b. A rarefaction region

c. A compression region

d. No correct answer

3- Sound travels in air at a velocity …….m/s.

a. 3400

b. 430

c. 340

d. No correct answer

4- Sound ……. Is a property of sound by which the ear can distinguish between harsh and sharp voices.

a. Intensity

b. Quality

c. Pitch

d. All of the answers are correct

5- The quanta of the color……..have the lowest energy.

a. Blue

b. Violet

c. Green

d. Red

6- Two sounds have the same pitch. Which of the following must be the same for the sound waves that transmit these sounds?

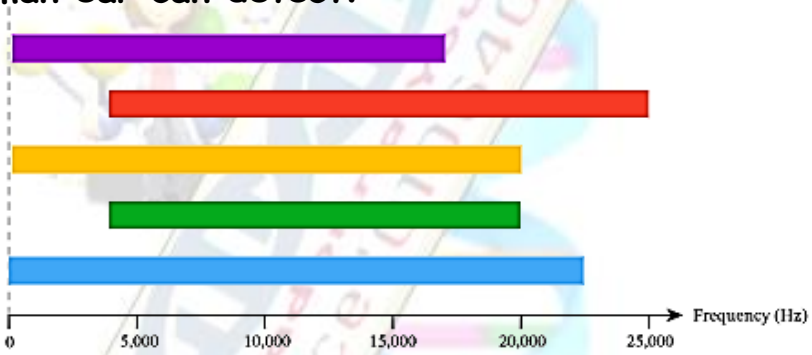
a. Frequency
b. Amplitude
c. (a) and (b)
d. No correct answer

7- Sound……is the amount of energy falling perpendicular to a unit area surrounding this point in one second.

a. Intensity
b. Quality
c. Pitch
d. No correct answer

8- Which color bar correctly represents the range of frequencies of sound waves that the human ear can detect?

a. Green
b. orange
c. Red
d. Violet



9- When the distance between the source of light and the surface decreases to third, the light intensity on the surface…….

a. increases to three times
b. increases to nine times
c. decreases to third
d. decreases to ninth

10- In a vibrating body of frequency 30 Hz, the number of complete vibrations in a minute is…….

a. 6
b. 1800
c. 60
d. 600

11- When the distance between the sound source and the ear is doubled, the sound intensity……

a. Decrease to its half.
c. Increase four times.
b. Increase twice.
d. Decrease to its quarter.

12- Sound velocity through air may be…….

a. 330 m/sec. only.
c. 350 m/sec. only.
b. 340 m/sec. only.
d. All the previous answers.

13- If a sound frequency 3000 vibrations/second is produced, we call its waves are…….waves.

a. Sonic.
c. Infra sonic.
b. Ultra sonic.
d. Transverse.

14- A Savart wheel makes 6 turns in a time of 2 seconds. The wheel has 120 teeth. What is the frequency of the sound produced by the wheel?

a. 240 Hz
c. 1,440 Hz
b. 122 Hz
d. 360 Hz

15- The media that we can see objects less clearly through them are called…….

a. Opaque
c. Translucent
b. Transparent
d. No correct answer

16- The energy of a yellow photon is ……. The energy of a violet photon.

a. More than.
c. Equal
b. Less than.
d. All the previous answers.

17- Sound intensity is…….proportional to the square of the amplitude of vibration of the source.

a. Inversely
c. Directly
b. Not
d. No correct answer

18- A Savart wheel makes 10 turns in a time of 4 seconds. The wheel has 50 teeth. How many teeth hit the flexible metal sheet each second?

a. 90 teeth
c. 125 teeth
b. 2,000 teeth
d. 700 teeth

19- We have got the refractive index of 4 materials which result of the four is incorrect……

a. 0.8
c. 1.8
b. 1.3
d. 1.5

20- A sound wave travels in air with velocity 330 m/s and has a wave length of 0.1 m, so its frequency is…….

a. 330 KHz
c. 33 KHz
b. 3300 KHz
d. 330 Hz

21- All of the following are factors affecting sound intensity except……..

a. amplitude of vibration
b. wind direction

c. medium density d. frequency

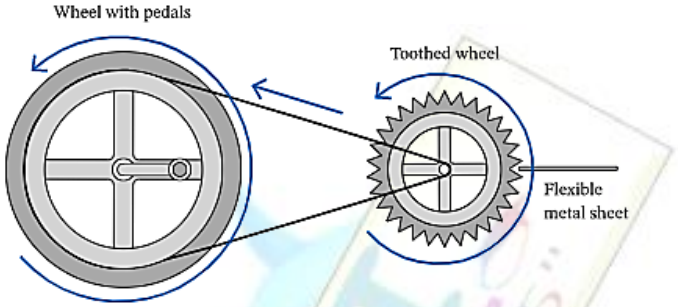
22- A Savart wheel produces a sound. When the pedals are turned faster, the time between teeth hitting the flexible metal sheet…….

a. increases

b. decreases

c. does not change

d. no correct answer



23- The sound travelling in air has less intensity than that travelling in carbon dioxide.

a. Because the density of air is lower than the density of carbon dioxide.

b. Because the density of air is bigger than the density of carbon dioxide.

c. Because the density of carbon dioxide is lower than the density of air.

d. No correct answer.

24- The human ear can distinguish between sounds through different factors …….

a. sound intensity

b. sound pitch

c. sound quality

d. all the answers are correct

25- When a light ray travels from water to air, the angle of …… is greater than the angle of……..

a. Incidence; refraction.
c. Incidence; reflection
b. Refraction; incidence.
d. Reflection; incidence.

26- If the angle between the incident sound ray and reflecting surface is 40°, the angle of reflection equals……..

a. 40°
c. 60°
b. 50°
d. 140°

27- The sound of non-uniform frequency, which is uncomfortable to be heard.

a. Noise tones
c. Sound intensity
b. Musical tones
d. No correct answer

28- Sound travels in straight lines in all directions away from a sound source. Which of the following correctly describes how the sound intensity decreases as sound travels away from the point?

a. The sound intensity decreases in direct proportion to the square of the distance that sound travels away from the point.
b. The sound intensity decreases in direct proportion to the distance that sound travels away from the point.
c. (a) and (b)
d. No correct answer

29- The intensity of light of a surface decreases to its quarter as the distance between the surface and light source is doubled.

a. Because light intensity is not proportional to square distance.

b. Because light intensity is inversely proportional to square distance.

c. Because light intensity is directly proportional to square distance.

d. No correct answer.

30- If the speed of sound through air is 340 m/s and the frequency of vibrating body = 170 Hz, its wavelength equals……..

a. 4 m

b. 3 m

c. 2 m

d. No correct answer

31- A person stood at distance of 170 m from a wall. He made a sound and heard its echo after 1 s. Calculate the speed of sound in air.

a. 170 m

b. 300 m

c. 340 m

d. No correct answer

32- The wavelength of sound wave is the distance between the centers of two…….

a. Compressions only.

b. Rarefactions only.

c. Compressions or rarefactions.

d. No correct answer.

33- Light waves are……waves.

a. mechanical transverse

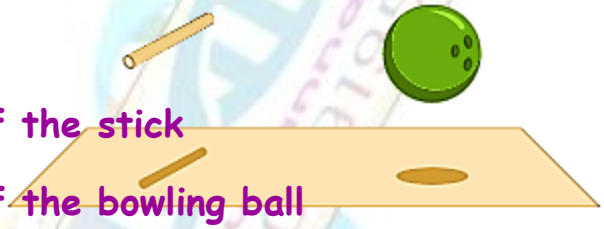
b. electromagnetic transverse

c. electromagnetic longitudinal

d. mechanical longitudinal

34- A thin wooden stick and a bowling ball fall onto a hard floor from the same height. When the objects hit the floor, they stop moving. Neither object changes its shape or temperature, and nor does the floor. The impact of each object on the floor results in sound being generated.

Which would transfer greater energy, the sound produced by the impact of the stick or that produced by the impact of the bowling ball?



a. The sound produced by the impact of the stick

b. The sound produced by the impact of the bowling ball

c. (a) and (b)

d. No correct answer

35- The inability to see the impurities presence in black honey.

a. Because it is an opaque medium which absorbs all light.

b. Because it is an opaque medium which reflects all light.

c. Because it is an opaque medium which refracts all light.

d. No correct answer

36- The sound produced from the school bell is considered……. Waves.

a. longitudinal

b. electromagnetic

c. transverse

d. no correct answer

37- What happens if decreasing the amplitude of the sound source.

a. Sound intensity decreases.

b. Sound intensity increases.

c. Sound intensity changes. d. No correct answer.

38- Sound can be heard from all surrounding directions.

a. Because air travels through sound as pulses of compression and rarefactions whose centers are the air source.

b. Because sound travels through air as pulses of compression and reflections whose centers are the sound source.

c. Because sound travels through air as pulses of compression and rarefactions whose centers are the sound source.

d. Because sound travels through air as pulses of compression and rarefactions whose centers are the air source.

39- Calculate the frequency of a tone produced by Savart's Wheel in 100 s, if the no. of rotations multiplied by the number of teeth equals 28800.

a. 2880 Hz c. 288 Hz

b. 80 Hz d. No correct answer

40- The frequency of the sound wave, which propagates through air in 340 m/s and whose length is 0.1 m, equals……..

a. 3400 Hz. c. 34 Hz

b. 340.1 Hz d. No correct answer

41- The wavelengths of visible light ranges between ……. Nm.

a. 380 : 700 c. 100 : 500

b. 400 : 600 d. 350 : 800

42- All the following are factors affecting sound intensity except……

a. amplitude
c. medium density
b. frequency
d. wind direction

43- The depth of sea water is estimated by using…….waves.

a. ultrasonic
c. sonic
b. infrasonic
d. all the answers are correct

44- The main source of light on the earth's surface is the……

a. Sun
c. Moon
b. Star
d. Candle

45- The color ……. Has the highest frequency among the spectrum colors.

a. Violet
c. Red
b. Green
d. yellow

46- White light consists of ……. Spectrum colors.

a. Nine
c. Six
b. Eight
d. seven

47- Photon energy= plank's constant x …….

a. Photon velocity
c. Light intensity
b. Photon frequency
d. No correct answer

48- Light can be easily transmitted through ……..media

a. Transparent
c. Opaque
b. Semitransparent
d. No correct answer

49- The distance that light travels in second is ……..

a. Velocity
c. Frequency
b. Intensity
d. No correct answer

50- Light travels in …….. lines.

a. Circular
c. Curved
b. Zigzag
d. Straight

51- ……. color has the highest wave length.

a. Red
c. Green
b. Violet
d. yellow

52- ……. Is the distance which is covered by sound waves in one second.

a. Sound intensity
c. Sound velocity
b. Sound intensity at a point
d. Sound quality

53- …….. are sound waves of frequency of less than 20 Hz.

a. Sonic waves
c. Infra sonic waves
b. Ultra sonic waves
d. No correct answer

54- Ultrasonic waves are used in several fields such as…….

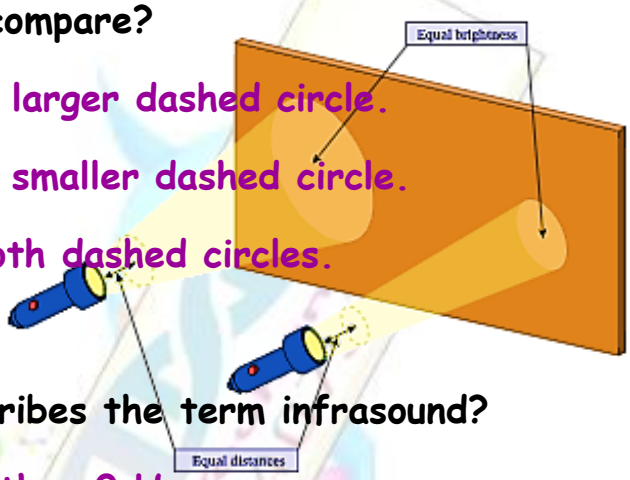
a. Military field.
c. medical field
b. industrial field
d. all of the answers are correct

55- Light shines on a surface. Which of the following properties of light is related to the intensity of the light shining on that surface?.

a. The color of the light
b. The speed of the light

c. The brightness of the light d. No correct answer

56- Two lamps shine light onto the same surface for the same amount of time. The dashed circles that light from the two lamps passes through have different areas. In which of the following ways do the light intensities at the dashed circles compare?



a. The light intensity is greater at the larger dashed circle.

b. The light intensity is greater at the smaller dashed circle.

c. The light intensity is the same at both dashed circles.

d. No correct answer

57- Which of the following correctly describes the term infrasound?

a. Sound waves with frequencies lower than 0 Hz

b. Sound waves that transfer thermal energy

c. Sound waves with frequencies lower than those that can be heard by humans

d. No correct answer

58- Which of the following correctly explains why a person standing a few meters away from an object producing infrasound would not hear the infrasound?

a. The human ear does not oscillate at infrasonic frequencies.

b. Infrasound can only travel a few centimeters through air.

c. Infrasound is too quiet for human hearing.

d. All of the answers are correct.

59- If the wavelength of a sound wave is increased, what would happen to the sound made by this wave?

a. It would have a higher pitch
c. It would get softer.
b. It would have a lower pitch.
d. It would get louder.

60- If the wavelength of a sound wave is decreased, what would happen to the sound made by this wave?.

a. It would have a higher pitch
c. It would get softer.
b. It would have a lower pitch.
d. It would get louder.

61- If the amplitude of a sound wave is decreased, what would happen to the sound made by this wave?

a. It would have a higher pitch
c. It would get softer.
b. It would have a lower pitch.
d. It would get louder.

62- If the amplitude of a sound wave is increased, what would happen to the sound made by this wave?

a. It would have a higher pitch.
c. It would have a lower pitch.
b. It would get softer.
d. It would get louder.

63- As the wavelength of sound increases, the frequency……

a. Is higher pitched.
c. Decreases.
b. Increases.
d. Stay the same.

64- As sound waves travel through air, they cause air molecules to……

a. Bend.
c. Be absorbed.
b. Lose energy.
d. Vibrate.

65- The higher the……., the higher the…….

a. Frequency; volume.
b. Frequency; pitch.
c. Sound; pitch.
d. Wavelength; decibels.

66- When the distance between the sound source and the ear is doubled, the sound intensity…….

a. Decreases to its half.
b. Increases twice.
c. Increases four times.
d. Decreases to its quarter.

67- Piano's sound differs from that of violin even they have the same intensity and pitch.

a. Because they are different sources.
b. Because they are equal in pitch only.
c. Due to the difference in their harmonic tones.
d. All the answers are correct.

68- The angle between the emergent light ray and the normal at point of emergence on the interface is called angle of…….

a. Refraction.
b. Deviation.
c. Emergence
d. Incidence.

69- The intensity of sound is directly proportional to…….

a. The square of the distance from the distance from the source.
b. The square of the amplitude.
c. The distance from the source to the ear.
d. No correct answer.

70- Sharp tones have……. Frequencies, while harsh tones have…..frequencies.

a. Low; high.
c. High; low.
b. High; high.
d. Low; high.

71- We see the sunlight, but don't hear the explosions that occur on the surface of the sun.

a. Because light travels in vacuum while sound needs a medium to propagate through.
b. Because light travels in medium while sound needs a vacuum to propagate through.
c. Because the sun is very far.
d. Because sound is faster than light.

72- The light ray which falls perpendicular to a reflecting surface , reflects on itself.

a. Because it refracts.
b. Because angle of incidence equal angle of reflection equal zero.
c. Because angle of incidence larger than angle of reflection
d. No correct answer.

73- If the angle between the incident light ray and the reflected light ray is 60^0, so the angle of reflection equals……

a. 15^o
c. 90^o
b. 30^o
d. 120^o

74- The wave transfers ……. In its direction.

a- Particles.
c- Matter.
b- Energy.
d- Force.

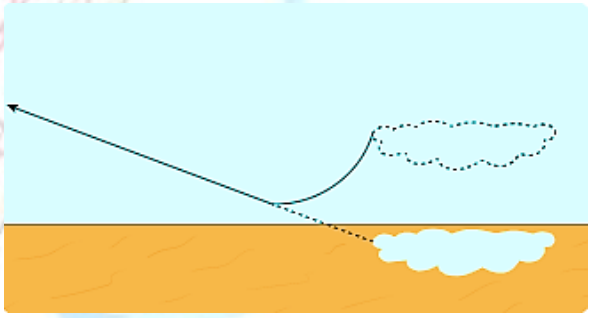
75- The human ear can hear sounds of frequency ……..

a. 50 KHz
c. 300 Hz
b. 30 KHz
d. 10 Hz

76- The diagram shows how a mirage is produced by refraction of light rays from points in the sky, making the rays appear to come from the ground.

- The refractive index of the air where the light ray direction is curved has a……value; The refractive index in the air where the light ray direction is straight has a…… value that is……. than the refractive index of the air where the light ray direction is curved.

a. constant, constant, less
b. constant, varying, less
c. varying, constant, greater
d. varying, constant, less



77- Which of the following is the correct formula for the frequency of the sound produced by a Savart's wheel as it turns at a constant speed for an amount of time?

a. Frequency = number of turns of wheel × time × number of teeth on wheel

b. Frequency = $\frac{\text{number of turns of wheel x time}}{\text{Number of teeth on wheel}}$

c. Frequency= $\left(\frac{\text{number of turns of wheel}}{\text{time}}\right)$ × numberof teeth on wheel

d. No correct answer.

78- Which of the following is the approximate sound intensity, in decibels,for the sound generated by a vacuum cleaner, as heard by the person using it?

a. 130 dB
c. 15 dB
b. 100 dB
d. 75 dB

79- Sound travels in straight lines in all directions away from a sound source. How many times greater is the sound intensity at a distance of 1 meter away from the sound source than at a distance of 2 meters away from the sound source?

a. 4 times
c. 2 times
b. 3 times
d. 1 time

80- When the distance between the source of light and the surface of a wall decreases , the light intensity on a surface …….

a. Decreases
c. Is doubled
b. Increases
d. Remains constant.

81- If the angle between the incident and the reflected rays is 400, so the angle of reflection = …….

a. 90°
c. 40°
b. 80°
d. 20°

82- The idea of operating periscope is……

a. Sound reflection.
c. Light reflection.
b. Analysis of light.
d. Light refraction.

83- As the velocity of the rotation of the gear in savart's wheel decreases, the frequency decreases, consequently the…….of the sound decreases.

a. Pitch.
c. Amplitude.
b. Type.
d. Intensity.

84- If a sound of frequency 3000 vibrations/seconds is produced, we call its waves are……..

a. Sonic
c. Infrasonic
b. Ultra sonic
d. Transverse

85- The level of sound intensity (or noise intensity) is measured by.....

a. Watt.
c. Meters.
b. Decibel.
d. No correct answer.

86- They are sound waves of frequencies lower than 20 Hz.

a. Ultrasonic waves.
b. Infrasonic waves.

c. Sonic.

d. No correct answer.

87- Sound intensity is directly proportional to the……

a. Amplitude

c. (a) and (b)

b. square of amplitude

d. No correct answer

88- The tones accompanying the fundamental tone, but they are higher in pitch and less in intensity.

a. Harmonic tones.

c. (a) and (b)

b. Noises.

d. No correct answer

89- The wood does not allow the passage of light through it.

a. Because it is an opaque medium that reflects all light.

b. Because it is an opaque medium that absorbs all light.

c. Because it is an opaque medium that refracts all light.

d. No correct answer.

90- Light waves are considered electromagnetic waves.

a. Because they need a medium to travel through.

b. Because they do not need a medium to travel through.

c. They are not electromagnetic waves.

d. No correct answer.

91- The medium which does not permit light to pass through it.

a. Opaque medium.

b. Spectrum colors.

c. Translucent media.

d. Transparent media.

92- A structure used in the analysis of light.

a. Periscope.
c. Triangular glass prism
b. Savart's wheel
d. (a) and (c).

93- The scientist…… proved that energy of the photon is…….. Proportional to its frequency.

a. Newton; inversely.
c. Max Planck; inversely.
b. Newton; directly.
d. Max Planck; directly.

94- When we look at a coin in a glass of water, its…….. position appears to be lower than the……..position.

a. Apparent; real.
c. Left; real.
b. Real; apparent.
d. Right; real.

95- Natural phenomena related to reflection and refraction of light.

a. Mirage
c. position of object
b. apparent shape of object
d. all of the answers are correct

96- ……is used to monitor the dangerous chemical reactions in the lab.

a. Optical fibers
c. Infrasonic waves
b. Periscope
d. No correct answer

97- The ratio between the velocities of light through air to the velocity of light through another transparent medium.

a. Total internal reflection
b. Absolute refractive index

c. angle of reflection
d. no correct answer

98- The mirage phenomenon takes place on desert roads at……. especially in the……..seasons.

a. Night; winter.
c. Noon; winter.
b. Night; summer.
d. Noon; summer.

99- It is the turning of a light ray when It is incident on a medium of larger optical density by an angle larger than the critical angle of this medium.

a. Absolute refractive index
c. Total internal refraction
b. Total internal reflection
d. No correct answer

100- The energy of a photon of green light is ……. the energy of a photon of yellow light.

a. less than
c. greater than
b. equal to
d. no correct answer

101- The ray falling perpendicular on the separating surface between two mediums different in the optical density……

a. Refract.
b. Does not refract.
c. Absorbed.
d. No correct answer.

102- The energy of ……. light photon is less than that of any other lights.

a. Green

b. Yellow

c. Blue

d. red

103- If the angle of incidence equals 40°, the angle of reflection equals……

a. 30°

b. 40°

c. 50°

d. 90°

104- Light travels through space at a speed of …….. m/s.

a. 3×10^{7}

b. 3×10^{6}

c. 3×10^{8}

d. No correct answer

105- The regular reflection occurs on……..surface.

a. Rough

b. Smooth

c. (a) and (b)

d. No correct answer

106- Doctors use waves which have frequency ……. to break down kidney and ureter's stones

a. less than 20 Hz

b. more than 20 KHz

c. equal to 20 Hz

d. less than 20 KHz

107- The incident light ray, the reflected light ray and the normal to the surface of reflection at the point of incidence all lie in one plane perpendicular to the reflecting surface.

a. Second law of reflection

b. First law of reflection

c. (a) and (b)

d. No correct answer

My Best Wishes

Dr. Madonna Youhanna

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Note:

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Answers

Question number	Answers
1	d
2	a
3	c
4	c
5	d
6	a
7	a
8	b
9	a
10	b
11	d
12	b
13	a
14	d
15	c
16	b
17	c
18	c
19	a
20	b
21	d

22	b
23	a
24	d
25	b
26	b
27	a
28	a
29	b
30	c
31	c
32	c
33	b
34	b
35	a
36	a
37	a
38	c
39	c
40	a
41	a
42	b
43	a
44	a
45	a
46	d
47	b
48	a
49	a

50	d
51	b
52	c
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94	b
95	d
96	b
97	b
98	d
99	b
100	c
101	b
102	d
103	b
104	c
105	b

106	b
107	a
108	
109